

Application No.: 09/422,944

Docket No.: 20198-00052-US

IN THE SPECIFICATION:

Kindly amend the specification as follows:

Page 1, paragraph 1 should read:

a¹ The invention concerns apparatus and methods for the radio transmission of chronometric information.

Page 1, paragraph 3 should read:

a² It is advantageous to apply this technique to the synchronization of very precise clocks, one being situated for example on the ground and the other on board a satellite. It is a case of precisely measuring the time difference between the respective transitions of these atomic clocks. More generally, it is a case of seeking the time difference between two contemporary events occurring in stations which are distant in space, the word "station" not implying a stationary position here.

Page 1, paragraph 4 should read:

a³ One of the stations transmits to the other a time marker related to its own event. Subject to knowing the actual transit time of the waves, the difference measured at the other station between the time marker received and the local event (or a time marker linked to it) gives access to the required time difference. In addition, it can be arranged so that the carrier is frequency linked to the time marker where the phase carrier improves precision.

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✓
Page 2, paragraph 1 should read:

a4
In order to know the distance travelled by the radio waves, a second transmission is needed in both directions. In the majority of cases, this second transmission must take place at the same time as the first. It will therefore be possible to have two transmissions and one reception for one of the stations, but the other station is the origin of one transmission and two receptions.

✓
Page 3, paragraph 3 should read:

a5
It overcomes the aforementioned difficulties by making provision for defining separate time segments, whose positioning in time (start and/or end) is substantially random. Transmission is enabled only during these time signals, whilst reception is enabled only outside said signals. This makes it possible to use the time markers of the signals without the effect of masking of the reception by the recurrent transmission.

✓
Page 11, paragraph 2 should read:

- a6
- the antennae A1 and/or A2 to transmit every 100 μ s on average, and

✓
Page 11, paragraph 3 should read:

- a7
- the transmission time windows to have positions and/or durations which have a random component, with preferably a duration of approximately 50 μ s on average. This can be achieved by randomly fixing the start and/or end times of the transmission time windows.

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Page 11, paragraph 4 should read:

a8
For its part, reception takes place during the time windows which are on average substantially complementary of 100 μ s. Thus the reception time windows also have a random duration, equal to a little less than approximately 50 μ s on average, as will be seen.

Page 12, paragraph 2 should read:

a9
In practice, in order to manage the transmission and reception priorities, the signal exchange devices have a switch SW1 (or SW2) with three ways: transmission, dead time, reception (Figures 3A and 3B). This is because, between transmission (50 μ s on average) and reception (48 μ s on average), 2 μ s are reserved for dead time, which makes it possible for example to avoid reception of a signal reflected prematurely by an aircraft.

Page 12, paragraph 4 should read:

a10
where τ is a function of the mean recurrence of the transmission windows ($\tau = 0.421/F_r$) and defines the bandwidth of the filter. At the output of the filter 51, a comparator 52 is provided, whose switching threshold is chosen to refine a mean cycle ratio of $\eta=50\%$ (50 μ s of transmission on average, to 100 μ s on average).

Page 13, paragraph 1 should read:

a11
It should also be noted that it is not necessary for the distant station to know the variability mode used for the transmission periods and/or positions, since provision is made, reciprocally, for the distant station to transmit for 50 μ s on average and every 100 μ s on average, and to receive the remainder of the time, except for the dead time. Thus reception is not always successful but, statistically, there will always be a sufficient proportion of successful receptions to be able to process the signal received.

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Pages 16-17, paragraph 6 should read:

a¹²

According to another advantageous characteristic of the invention, two distinct codes are used, one for transmitting the signal e1 or for returning the signal r1, and the other for transmitting the signal e2, these codes being known in reception in orbit and on the ground. Thus each signal exchange has, in addition to its radio frequency carrier, a timer marker linked to a code which can be discriminated by correlation. In order to distinguish the two received signals r1 and e2 on the ground, a correlation in the knowledge of their respective codes is effected by the circuit for processing and reception C1. It should be noted that the transmission powers are situated here above the noise. In addition, durations Tsi close to 10 μ s suffice in this application, which advantageously allows processing times by correlation which are relatively short in reception, typically around 20 s for the onboard receiver of the satellite, as against 2 s on the ground, where the position of the satellite and the phase of its clock are known with a good approximation.

IN THE CLAIMS:

Kindly amend the claims as follows:

Sub B¹

a¹³

1. (Amended) Apparatus for exchanging radio signals provided with time markers comprising radio transmission means having a generator to generate a transmission signal, comprising a carrier and a repetitive time marker, reception means having a reception processing circuit for processing a received signal, said signal comprising a carrier and a repetitive time marker, the radio transmission and reception means transmitting and receiving the same carrier frequency signal, and sequencing means to define separate time segments with substantially random successive positions to control the transmission and reception means enabling transmission only during said time segments, and enabling reception outside the segments, whereby the time markers may be processed without any recurrent effect of the transmission signal masking the reception of the received signal.